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MONTANA OUTDOORS

Our Point of View

Fishing remains one of this nation's most popular outdoor recreation activities. A recent national survey ranked fishing first among men, ahead of golf and swimming. In Montana, we trail only Alaska in the number of anglers per capita.

It appears, though, that the number of young anglers is declining in Montana. Some blame it on the large number of single-parent families. Others think it may be a lack of opportunity. Still others believe it is competition with organized sports, lack of free time among parents, or other reasons.

LARRY JAVORSKY

Too often, programs designed to encourage fishing are put in place without attempting to find out why people don't fish. Recent studies, for example, show that fishing participation by children in single-parent families is about the same as in other families.

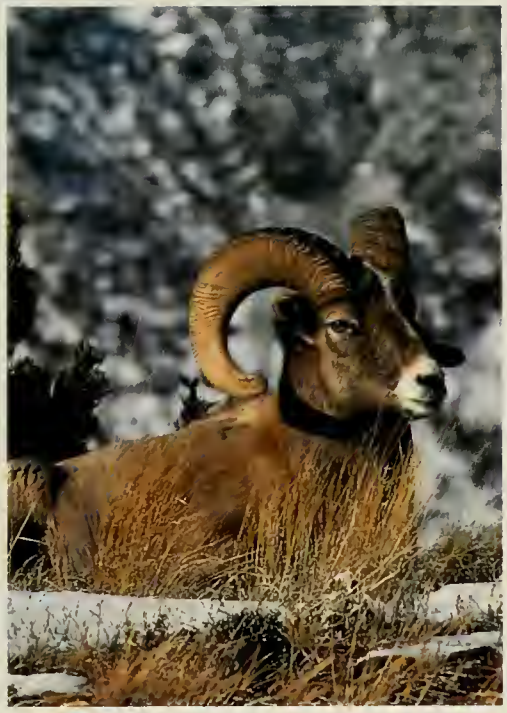
In Montana we took a different approach. First, people told us one of the most important reasons they fish is to be with family and friends. Second, we could see that there was no single barrier to participation—for some it was lack of knowledge, time, or opportunity, or the cost of getting started.

So we pulled together a collection of ideas to use in communities across the state. At the core was a strong belief that for these efforts to be effective, they must be embraced by local communities. In our second year that belief is proving true.

Schools, volunteer instructors, conservation and community organizations, libraries, and many more are making "Family Fishing Adventures" our fastest growing program. Whether exchanging ideas over the Internet, learning about water safety, or catching that first fish—they are experiences long remembered.

Activities like fishing can be enjoyed for a lifetime. They provide an opportunity to learn, be challenged, have fun, or just relax. Are we recruiting future anglers? Only if they choose. Turn to Dave Hagengruber's article on page 15 to find out how you can help reduce the barriers so kids, families, and friends have a chance to make the choice.

Patrick J. Graham, Director
Montana Fish, Wildlife & Parks



JIM MEPHAM

The Sun River Canyon is home to one of the nation's largest bighorn sheep herds (page 8).

MONTANA OUTDOORS

May/June 1998
Volume 29, Number 3

Features

2 LANDSCAPE OF CHANGE
by Chris Lorentz
If you like geology, dinosaurs, and wildlife, you'll *love* Makoshika State Park.

8 A WILDLIFE VIEWING TOUR GUIDE: ROCKY MOUNTAIN FRONT
by Deborah Richie
From snow geese to grizzly bears, the East Front offers a wealth of wildlife attractions.

15 FAMILY FISHING ADVENTURES
by Dave Hagengruber
A new program geared toward kids is helping keep Montana's fishing tradition alive.

19 ROCK CREEK: A CONSERVATION SUCCESS STORY
by Ellen Knight
The Rock Creek Trust and its many partners are working to protect this blue-ribbon trout stream.

25 PERSPECTIVES—BAD NEWS BEARS
photography by Donald M. Jones
Black bear cubs emerge from their den with a leg up on survival.

Departments

29 CATCHALL—The Glacier Institute celebrates its fifteenth birthday
30 1997 FISH RECORDS—All fishes great and small
32 FROM THE FIELD—Sunnyslope grayling defy the odds
34 READERS RESPOND
37 CONTRIBUTORS

COVERS—Black bear cub by Donald M. Jones
Clark's nutcracker by Alan G. Nelson

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Landscape of Change:

by Chris Lorentz

THE STARK BEAUTY of the eastern Montana badlands conjures up images of the Old West—Lakota warriors and cavalry, cowboys and cattle drives. It's hard to imagine that this arid region, adorned with rock sculptures of every imaginable shape, was once a humid jungle populated by dinosaurs, crocodiles, and strange tropical plants. The story of Makoshika's transformation from sea to prairie is clearly written in the fossil record—spelled out in crumbling bones, petrified wood, and plant impressions in sedimentary rock.

The badlands of Makoshika are so spectacular that even before the turn of the century people advocated setting the area aside as a park. In 1939, A.J. and Catherine McCarty made the dream possible by donating land for a park to Dawson County. In 1953, Dawson County and the State of Montana teamed up to establish Makoshika State Park.

Makoshika State Park

RON WILEY

The rugged terrain and sparse vegetation make life in the badlands challenging for man or beast, yet both have lived here at one time or another. Until the early 1950s, wild horses wandered over the badlands. They were descendents of horses that escaped from ranches and survived in the rough breaks where fences are hard to build and harder to keep. Cowboys who wanted a sure-footed horse would wait until late winter when the wild horses were tired and weak. Only then could a rider stand a chance of roping one of these wild steeds.

But long before cowboys chased wild horses in eastern Montana, early peoples inhabited the Yellowstone River Valley. Ancient campsites and scattered stone tools and projectile points indicate that nomadic hunters visited the badlands at the end of the last ice age, more than 11,000 years ago. Ongoing research may someday tell the complete story of these early inhabitants of Makoshika.

Wildlife in the park today includes numerous mammals, songbirds, reptiles, and raptors, including Makoshika's mascot, the turkey vulture. Turkey vultures migrate south for the winter and return again each spring. Buzzard Day, a park festival celebrating these soaring scavengers, is held the second Saturday of June each year.

THE MAKOSHIKA VISITOR CENTER

Located at the park entrance, the visitor center is Makoshika's nerve center and the starting point for park guests. Completed in 1994, it features interpretive displays on badlands geology, wildlife, dinosaurs, and early human history as well as a hands-on collection of fossils, petrified wood, and rocks common to the park.

A display called the "Seas of Time" highlights the vast period when a shallow sea covered much of North America. During this time, layers of sediment thousands of feet thick accumulated on the ocean floor. Trapped in the sediments were the shells and skeletons of plants and animals such as ferns, cycads, clams, ammonites, and corals.

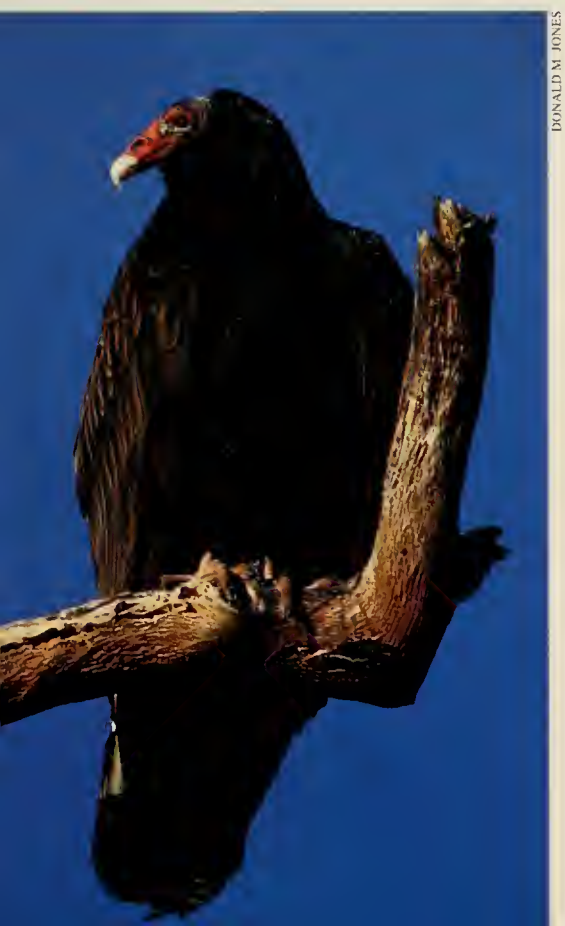
The "Age of Dinosaurs," a favorite exhibit of children and adults alike, showcases the skull of a juvenile triceratops and fossil remains from hadrosaurs (duckbills) and pachycephalosaurs (boneheads). As the Cretaceous period ended and dinosaurs became extinct some 65 million years

ago, the lush, subtropical landscape changed. The climate cooled and the seaway retreated, giving rise to the Tertiary period and the age of mammals.

The Tertiary period also saw the first evidence of man in the badlands. Some artifacts in Makoshika include charcoal, bone, stone tools, and projectile points dating back more than 11,000 years. Evidence from an archeological dig near Lindsey, 25 miles west of Glendive, suggests early hunters may have scavenged an imperial mammoth found on the site. Carbon-dating places the Lindsey mammoth's death at more than 11,000 years ago, the approximate time when man occupied campsites in Makoshika.

The mezzanine level of the visitor center provides a spectacular view of the badlands through 30-foot-tall windows. Exhibits on paddlefish—strange, ancient fish that still inhabit the Yellowstone and Missouri rivers—and related research are also displayed on this level. Back on the main floor, the park store features educational items relating to dinosaurs, geology, wildlife, plants and, of course,

CHUCK HANEY



DONALD M. JONES

Opposite page: *The Makoshika Visitor Center houses interpretive displays on geology, dinosaurs, wildlife, and early human history.* **Above:** *Cap rocks are formed when a hard sandstone cap protects softer, more erodible rock beneath.* **Left:** *Turkey vultures use sharp eyes and a keen sense of smell to seek out carrion.*

Makoshika State Park. Travel information, park maps, and trail brochures are also available. A Travel Montana kiosk provides access to a computer database of information on everything from road conditions to special events and accommodations all across Montana.

ROADS AND CAMPGROUNDS

In 1997, Montana Fish, Wildlife & Parks (FWP) spent over a million dollars on roads and facility improvements at Makoshika. The main campground has been renovated and expanded to accommodate up to 11 family units. With more than 40 new trees and shrubs, the campground is well on its way to being an oasis in the badlands.

Makoshika also offers picnic and camping areas in the upper portions of the park. Pine-on-Rocks is a picturesque picnic and camping area with great views of sunsets and sunrises.

Many of the dispersed sites have only one table and afford opportunities for solitude and privacy.

AMPHITHEATER RENOVATION

Makoshika's natural amphitheater sits in a bowl overlooking Cains Coulee. Cap rocks provide a grand backdrop behind the stage, and the inherent beauty and natural acoustics of the site make it ideal for theater productions and church services. The Friends of Makoshika, a nonprofit organization formed to assist the park, has embarked on an ambitious project to renovate the amphitheater, one of Makoshika's crown jewels. Improvements will include replacing the plank bleachers with contour benches and making the site accessible to the disabled. The addition of solar electricity for lights, a water system, and new restrooms will make the amphitheater the preeminent outdoor facility in the Glendive area. Once renovated, it will comfortably accommodate dinner theaters, church services, weddings, and educational programs.

CAP ROCK TRAIL

The best-known trail in the park is the Cap Rock Trail, named after a prominent mushroom-shaped rock near the trailhead. This half-mile loop trail provides a close-up look at the geology and plants of the badlands. Rapid erosion of soft sedimentary rock has created countless cap rocks and pinnacles and a spectacular natural sandstone bridge. Visitors should plan on spending close to an hour on this trail; kids often hike the trail twice while other family members relax on a trailside bench and soak in the scenery.

DIANE GABRIEL TRAIL

The Diane Gabriel Trail is dedicated to the late Diane Gabriel, a Milwaukee Public Museum paleontologist and Glendive resident who loved to study dinosaurs and teach children and adults about these magnificent extinct creatures. The trail leaves the campground in Cains Coulee and follows a side draw into the badlands. The 1.7-mile loop winds through banded layers of sandstone, bentonite clay, and mudstone. Along the path interpretive signs encourage visitors to participate in hands-on experiments in geology, sedimentation, and fossil study. A trail brochure describes the rocks, fossils, plants, and erosional forces at work in this unique landscape. A side spur leads up a ridge to the backbone of a hadrosaur (duckbill dinosaur) locked in a large sandstone boulder. A vista at the top of this spur trail provides a view of Cains Coulee with Glendive visible in the distance. The return loop of the trail wanders among a dozen nest boxes claimed each spring by mountain bluebirds.

KINNEY COULEE TRAIL

For those who tend toward the path less traveled, Kinney Coulee Trail is the place to visit. This hike leads down to the depths of the Cretaceous sediments and into some very rugged country. It's a good idea to take water, a sack lunch, and plenty of film for the trek. The trail drops down to the bottom of Kinney Coulee and through some of the wildest geology in the park.

LIONS YOUTH CAMP

The Glendive Lions Club owns and operates a 160-acre youth camp in Makoshika. The camp features two lodge buildings with sleeping accommodations and kitchen facilities. Makotahena Lodge has 18 double beds and space for additional overnight guests. Outside decks, which are equipped with tables, benches, and barbecues, feature panoramic views of the badlands. Stairs lead down to an observation deck that is ideal for watching meteor showers on summer evenings. Sleepy Hollow Lodge consists of a historic log building with separate bunkhouse cabins and a shower building. The lodge and cabins sit in a wooded draw that provides shelter and shade. The Lions Club rents out these facilities; reservations can be made through the Glendive Lions Club at 406-365-2556.

OIL AND GAS RESOURCES

In recent years oil and gas prices have increased and spurred another exploration boom in eastern Montana

LEAVE FOSSILS IN PLACE

Park staff are faced with the paradox of how to educate people about fossils while preventing them from being carried away by souvenir hunters. Kids are great, and they really want to learn about fossils, especially dinosaur remains. There is a definite glow in the face of a child who gets to touch and hold a dinosaur bone in his or her hand for the first time. Yet, everyone needs to be aware that the fossils in the park are not to be taken home. The park staff endeavors to teach people to enjoy the thrill of discovery, then leave the fossil in place so the next person along the trail can have that same experience.

GARY LEPPART

Fossils like this dinosaur bone should be left alone for others to enjoy.

Visitors who find what looks like an important fossil should leave it alone and tell the park staff about what they have found. Usually a staff person or volunteer can view it and determine if it is a significant find. The staff has looked at a lot of cow bones and rocks, but sometimes it really *is* something important. In some cases it may take months before a fossil is positively identified.

and North Dakota—a boom that has reached Makoshika State Park. The geology that created the badlands also trapped oil and gas deep in the earth. FWP does not own the mineral rights under the park—the minerals are owned by a mix of public and private entities, including the BLM, Dawson County, and Montana Department of Natural Resources and Conservation. Coordinated management of the publicly owned minerals within the park is achieved through an agreement among these parties.

Oil companies have leased minerals under approximately 42 percent of the land within 8,123-acre Makoshika State Park. Fortunately, advances in oil field technology allow exploration and even extraction of oil without impacting the park. The most promising oil prospects are in the southwest corner of the park and can be accessed with directional or horizontal drilling techniques from outside the park. FWP is working to protect the park while still allowing the legally required access to the potential mineral reserves under Makoshika.

BOB HARMON/MUSEUM OF THE ROCKIES

A Montana National Guard helicopter ferries part of the thescelosaurus skeleton—encased in a plaster jacket—to a waiting trailer.

DINOSAUR DISCOVERY

In the summer of 1996, park volunteer Larry Boychuk found some bone fragments that looked "different." Park staff could not identify them, and they sat encased in rock for almost a year. The next summer, when paleontologists from the Museum of the Rockies were visiting Makoshika, Boychuk showed the bone fragments to Bob Harmon, chief preparator for the museum. Harmon knew these bones were not common. While doing some preliminary excavation, he turned over a rock beside the bones and found the complete skull. A man of few words, Harmon calmly said, "cool."

The skull led to positive identification of the skeleton. It was a thescelosaurus, a plant-eating dinosaur that walked erect on its hind legs. The find touched off a flurry of excitement in the scientific community, since a complete thescelosaurus skeleton had never been found (all previous information was derived from partial skeletons and a few isolated limb bones). To ensure public safety as well as protect the fossil, publicity was kept to a minimum. The dig site was on a very steep hillside and the crew was afraid sightseers would knock rocks loose and possibly hurt someone.

The 12-foot skeleton was completely encased in rock, which preserved the bones but made excavation difficult and time consuming. The museum crew worked six or seven days a week for seven weeks to jackhammer away as much rock as they dared. Each time a bone was exposed it was immediately jacketed in plaster and burlap to protect it from the flying debris.

After nearly eight weeks of work, the skeleton was finally free from the ground. However, the rock, bone, and plaster jacket weighed nearly 5,000 pounds. Two smaller jackets weighed about 250 pounds each. The problem now was finding a way to safely remove the skeleton from the dig site. After several weeks of preparation, the Montana National Guard agreed to airlift the jacketed bones out of the ravine as part of a training drill.

On the morning of September 23, 1997, a Blackhawk helicopter lifted the thescelosaurus skeleton out of the ravine and onto a waiting trailer. The bones were taken to the Museum of the Rockies in Bozeman, where curator of paleontology Jack Horner and Bob Harmon will prepare the thescelosaurus skeleton. Eventually, a display featuring the thescelosaurus will return to Makoshika.

The thescelosaurus was not the first dinosaur recovered from Makoshika. In 1990 a research team led by Diane Gabriel found a triceratops skeleton while studying dinosaur diversity. This skeleton, which took two summers to excavate, was also taken to Bozeman for preparation at the Museum of the Rockies. The Friends of Makoshika ran a fund-raising campaign and paid for preparation of the skull, which is now the centerpiece of the dinosaur display at the Makoshika Visitor Center.

MAKOSHIKA STATE PARK offers a landscape of unique geology and exceptional beauty. Visitors can get a sense of times long past when dinosaurs walked these lands, or simply watch the colors of a sunset dance across the badlands. In the vast, open space we call eastern Montana, Makoshika truly is a landscape of change. ■

JOHN LAMBING

A WILDLIFE VIEWING TOUR GUIDE

ROCKY MOUNTAIN FRONT

by DEBORAH RICHIE

TOUR LENGTH/TIME

300 miles/4-5 days

FROM A DISTANCE, THE ROCKY MOUNTAIN FRONT appears a formidable reef upon the Great Plains. Close up, the 150-mile-long East Front spells refuge for everything from golden eagles and mounrain goats to bighorn sheep, long-billed curlews, and lizards. This is the last place where the grizzly still descends from the mountains to roam the prairie. Here also, elk, mule deer, and pronghorn feast on grasses that part to reveal travois ruts of the Old North Trail, once traversed by ancient peoples. Below the surface, excavated dinosaur nests expose a prehistoric wildlife mecca. In this wild west landscape, it's possible to drift from the twentieth century to 80 million years ago in a single step.

West of the Front lies 2.5 million acres of protected wildlands—from the Scapegoat Wilderness to the south, to the Bob Marshall Wilderness, Great Bear Wilderness, and finally Glacier National Park to the north.

Wilderness and the Front's network of large private ranches, Blackfeet tribal lands to the north, preserves, and wildlife management areas merge into one vital wildlife complex.

A 300-mile round-trip journey from Great Falls to the featured eight wildlife viewing areas will take you into the heart of the Front, to country that inspired Choteau author A.B. Guthrie ro name his famous novel *The Big Sky*.

Allow at least four days to see all eight sites and a week or more for leisurely exploration. Here's one possibility for the breathless, four-day version. On day one, drive from Great Falls to Freezout Lake Wildlife Management Area (WMA) via Highway 89. Then, continue on to Choteau; from there, head 34 miles north to Dupuyer and turn west to the Theodore Roosevelt Memorial Ranch. On day two, check out the Blackleaf WMA and canyon west of Bynum. Take the cut-across road through the Blackleaf WMA south to the Teton River Road and visit Pine Butte Swamp Preserve. Spend day three in the Teton River country as well, hiking to Our Lake and stopping by Ear Mountain WMA before joining the guided tour of Egg Mountain. On day four, drive 26 miles south of Choteau to Augusta and spend the last day at the Sun River WMA and canyon before returning to Great Falls via Highway 21.

JOHN LAMBING

Spring wildflowers

DENVER BRYAN

Elk

JOHN G. OBREY, JR.

Black-necked stilt

SEASONAL HIGHLIGHTS

Spring: Snow geese, tundra swans, and ducks migrate; elk head for the high country; grizzlies descend to the prairies; ground squirrels and marmots pop up from their dens.

Summer: Mountain goats graze above Our Lake and Blackleaf Canyon; avocets and black-necked stilts raise chicks at Freezout; penstemon, lupine, prairie smoke, phlox, and arrowleaf balsamroot attract butterflies; trout rise to insects; pronghorn race the winds.

Fall: Bighorn sheep rams clash in late fall; waterfowl migrate; snowshoe hares change color; sandhill cranes fly south.

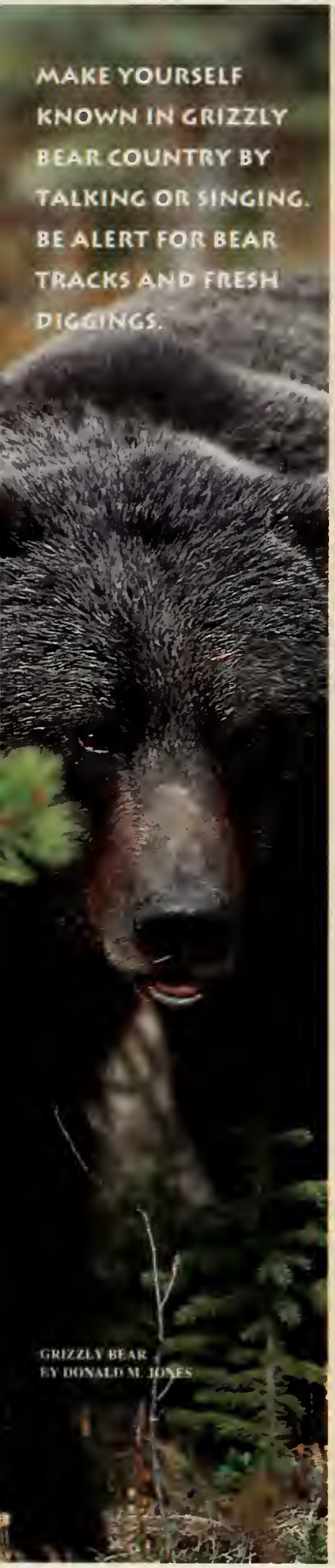
Winter: Thousands of elk, mule deer and white-tailed deer gather on winter ranges; marmots and pikas hibernate; coyotes and rough-legged hawks hunt for voles.

SNOW GOOSE FRENZY AT FREEZOUT LAKE WMA

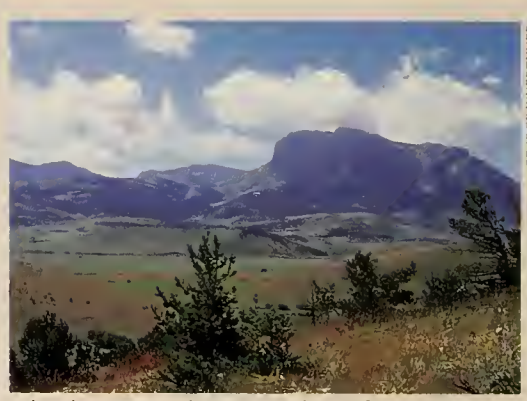
RICHARD MOUSEL

Snow geese

The prairie sky glistens with restless white feathers dipped in ebony each spring and fall. Migrating snow geese by the hundreds of thousands touch down at Freezout Lake WMA to rest on the series of natural and artificial ponds bisected by U.S. Highway 89 and to feed in nearby grain fields. During peak migration, Freezout resonates with the calls of a million waterfowl. In summer, avocets, black-necked stilts, black-crowned night herons, and common terns are among a multitude of birds nesting here. Stop at the kiosk by the WMA headquarters to pick up a detailed birding guide and map of Freezout's dike roads open for car and foot travel. Don't miss observing birds close-up from the accessible viewing blind on the northwest end of the driving tour. Freezout WMA is open year-round, but best wildlife viewing is spring through fall.


MAKE YOURSELF KNOWN IN GRIZZLY BEAR COUNTRY BY TALKING OR SINGING. BE ALERT FOR BEAR TRACKS AND FRESH DIGGINGS.
GRIZZLY BEAR
BY DONALD M. JONES

PRESIDENTIAL VIEWS ACROSS THEODORE ROOSEVELT MEMORIAL RANCH


GEORGE WUERTHNER

Theodore Roosevelt Memorial Ranch

From a windy ridge overlooking the 6,000-acre ranch owned by the Boone and Crockett Club, you can imagine the grinding of glaciers carving out this verdant valley, today sliced by cottonwood- and willow-lined Dupuyer Creek. Interpretive signs at the beginning and end of half-mile vista trail feature natural and cultural history. As many as 2,800 mule deer and 650 elk winter on south-facing hillsides. In summer, migratory songbirds, from warblers to flycatchers, nest in streamside cottonwoods and willows that are home to white-tailed deer as well. Beavers dam the feeder streams, playing a keystone role in Dupuyer Creek's ecology. Red-tailed hawks hunt for ground squirrels. The secretive visits of grizzly and black bears, mountain lions, bobcats, and wolverines come as no surprise in a wild and woolly landscape that's managed both for wildlife and cattle ranching.

To get there, take Dupuyer Creek Road west for 8.5 miles, keeping a sharp eye for songbirds and perhaps the shadowy outline of something bigger in the brush. Take the left fork and go south 0.5 mile to a T; go left 3 miles to another T; go right 2 miles to the kiosk and nature trail. The trail is open to the public, except during hunting season (mid-October to December 1). All other access requires written permission from the ranch headquarters. The road continuing up the North Fork of Dupuyer Creek to national forest land takes you to outstanding vistas of Walling Reef.

STEVEN AKRE

Blackleaf Canyon

BEARS ON THE BRINK: BLACKLEAF WMA AND CANYON

Grizzly and black bears venture each spring from their high mountain dens to the brink of their range, searching for greens and winter-killed animals. Blackleaf WMA is a favorite prairie destination. Antelope Butte Lake forms an excellent observation point for an unlikely, but possible, sighting of a grizzly in the upper reaches of creek bottoms to the west. The Blackleaf conserves another chunk of critical winter range for elk and mule deer. The 11,000 acres of grasslands, limber pine ridges, and wet meadows sustain jackrabbits, snowshoe hares, Columbian and Richardson's ground squirrels, thirteen-lined ground squirrels, and yellow-bellied marmots. A

healthy prey base makes a good living for hawks, prairie falcons, golden eagles, coyotes, and weasels. Along aspen-lined Blackleaf Creek, look for western flycatchers, Townsend's solitaires, goldfinches, and red-naped sapsuckers. The county road ends at Blackleaf Canyon. Hike the trail through this narrow cleft below cliffs inhabited by mountain goats.

The WMA is open May 15 to December 1. Take the Blackleaf Road west from Bynum 14 miles. The road continues four more miles through the WMA to the canyon. Backtrack and take the cutoff road at the 14-mile mark (directional signs at this junction) to reach the turnoff to Antelope Butte, and to continue on to the Teton River Road. The cutoff road past the WMA may be impassable when wet.

JIM MEPHAM

Pine Butte Swamp Preserve

ONE IN A MILLION: PINE BUTTE SWAMP PRESERVE

Rarities grace the 18,000-acre Nature Conservancy preserve where flowing groundwaters nurture the Front's largest prairie swamp or "fen." The yellow lady's slipper, Macoun's gentian, cotton grass, Craw's sedge, a hybrid minnow, and grizzly bear are among the fen rarities. Grizzlies descend to the fen in spring and summer to rear and feed their young in the company of sandhill cranes, northern harriers, beaver, and white-tailed deer. Fifty mammal and 150 bird species inhabit the preserve. Pine Butte stands sentinel over all, a lone sandstone escarpment sideswiped by the glaciers.

AL & MARY JANE MUELLER

Yellow lady's slipper

For a sweeping view of the fen and Pine Butte to the east and Ear Mountain to the west, hike the short A.B. Guthrie Memorial Trail from the kiosk up to a ridge where gnarled limber pines testify to winds and weather. June and July offer the best trailside bird and wildflower viewing—from mountain bluebirds, savannah sparrows, and long-billed curlews to penstemon, lupine, prairie smoke, phlox, and arrowleaf balsamroot.

Note that the trail is the only public access allowed on the preserve without a guide (tours and weekly stays are available through Pine Butte Guest Ranch). Take the South Fork Teton River Road fork at mile 15 of the Teton River Road, cross the river, and proceed south to reach the kiosk and trail.

LUPINE AND PRAIRIE SMOKE BY JIM MEPHAM

STEER CLEAR OF NESTS AND DENS. LEAVE BABY BIRDS AND YOUNG ANIMALS WHERE YOU FIND THEM.

CLARK'S NUTCRACKER
BY DONALD M. JONES

MOUNTAIN GOATS RULE OUR LAKE

STEVEN AKRE

Mountain goats at Our Lake

Wildlife viewers take heart; it would be an unusual July or August day *not* to see mountain goats on the cliffs above Our Lake. Goat fur and tracks reveal their presence at water's edge when people are not present. The 3.5-mile trail to one of the Front's few alpine lakes leads from forest to treeless terrain along a well-maintained, gradual series of switchbacks. Just beyond the trailhead, a pair of interpretive signs feature mountain goats and alpine wildflowers. In the conifer forest, listen for ruby-crowned kinglets, golden-crowned kinglets, mountain chickadees, red crossbills, and Cassin's finches. Ravens and Clark's nutcrackers could well be companions throughout the hike. Once at Our Lake, remember that mountain goats have first rights here. To preserve this fragile ecosystem, people must stay on trails, leave wildflowers on the stem, and observe mountain goats from a respectful distance.

Take the South Fork Teton River Road for 9 miles—past Mill Falls Campground—to the end of the road. This is also the trailhead for Headquarters Pass.

STEVEN AKRE

Ear Mountain

GRIZZLY GATEWAY: EAR MOUNTAIN WMA

Between Pine Butte Swamp and the high peaks, the 3,000-acre Ear Mountain WMA serves as a spring gateway for grizzly bears. Here, they can hide in aspen groves and emerge at night to graze in the open wetlands on favorite plants like cow parsnip and angelica. The North Fork of Willow Creek forms a hidden passage for bears traveling from mountainside to fen and back. Mule deer, bighorn sheep, black bears, raptors, and songbirds also find shelter here. The summit plateau of Ear Mountain, just beyond the WMA, harbors a vision quest site and overlooks remnants of the prehistoric Old North Trail. The 8,380-foot sacred peak presides over one of the few places left for grizzly bears to follow their own ancient pathways.

From Choteau, drive south 0.5 mile, turn west on the Bellview Road (at Pishkun Reservoir sign). Continue past the turnoff to Pishkun Reservoir (5 miles out) and head 17 more miles to the

trailhead. Coming from Our Lake, take the county road through Pine Butte Swamp Preserve, past the kiosk approximately 3 to 4 miles. Then, turn west at the T and go another 4 miles. From the public parking area, walk a short way up an old road to a knoll. Scan for bighorn sheep on Ear Mountain's upper slope in summer. Look for sheep with lambs on lower slopes in spring.

For a longer scenic hike into the WMA, take the South Fork Teton River Road 1.5 miles to a marked pullout and hike the Bureau of Land Management trail for 1.5 miles to the WMA, traversing the Front foothills. Remember to avoid unwanted surprises; make your presence known in bear country. The WMA is open from May 15 to December 1.

DINO DIGS: EGG MOUNTAIN

JIM MEPHAM

Dinosaur dig near Egg Mountain

Where the East Front eases toward the plains, a rather inconspicuous square mile of eroded washes and knobs has found its way to stardom for one reason: dinosaur eggs and nests—lots of them. In 1978, paleontologist Jack Horner confirmed a Maiasaura nest here with fossilized babies that revealed dinosaur maternal behavior for the first time. By the mid-1980s, he and his crew chiseled away rock and soil to reveal entire nesting colonies of dinosaurs that dwelled in a tropical climate some 80 million years ago. Horner believes the dinosaurs returned year after year to the same nursery. Egg Mountain itself, a mudstone knob, is chock full of fossilized dinosaur eggs—more eggs than in any other spot in the world.

The only way to visit Egg Mountain is to take a free afternoon tour hosted by a paleontologist from the Museum of the Rockies. These tours are available from June 25 to August 20 each summer. Please respect the private landowners in the vicinity and do not trespass. The Old Trail Museum in Choteau has information on the exact tour time and where to park.

RODNEY SCHLECHT

Sun River WMA

CHARISMATIC MEGAFAUNA OF SUN RIVER WMA AND CANYON

Up to 2,000 elk depend on the plentiful grasses and shelter of this 20,000-acre WMA. Their single-file trails lead here with winter's advance from all parts of the Sun River drainage. By May 15, the public opening date, the few elk still remaining soon join their brethren

GIVE ANIMALS THE ROOM THEY NEED TO LIVE. WATCH WILDLIFE FROM A SAFE DISTANCE, FOR YOU AND FOR THEM.
BIGHORN SHEEP
BY JIM MEPHAM

high in the Bob Marshall Wilderness. In summer, the Sun River is far from devoid of wildlife. The recorded 33 mammal, 73 bird, 2 amphibian, and 3 reptile species find refuge within 25 habitat types that include three perennial streams and two lakes, Swayze and Dickens. Summer wildlife viewers might see black bears, mule and white-tailed deer, and several species of grouse. Trumpeter swans and tundra swans touch down in potholes during spring and fall migration.

RODNEY SCHLECHT

Sun River Canyon

Farther up the Sun River Canyon, you reach the haven of one of the country's largest bighorn sheep herds. Late November to early December is the best time to witness the spectacle of rams vying for leadership on a flat across the river in the Wagner Basin. Look for a marked viewing area with a sheep interpretive sign. Besides the obvious signs of beaver in the river, keep an eye out for harlequin ducks that breed along fast-flowing waters.

Take the Gibson Reservoir/Sun Canyon Road 3.5 miles to a fork. Go left 5 miles to the WMA. Roads lead to the WMA at the southeast corner or 2.5 miles farther west at Swayze Lake. In winter, elk may be viewed from pullouts outside the WMA and from the main road leading to Gibson Reservoir and a major trailhead for the Bob Marshall. The WMA is open May 15 to December 1. ■

FOR MORE INFORMATION ON SITES, CAMPING, RECREATION OPPORTUNITIES, GUIDED TOURS:

Charlie Russell Country: 1-800-527-5348.

Choteau Chamber of Commerce: 1-800-823-3866.

Montana Wildlife Viewing Guide: by Hank and Carol Fischer, Falcon Press, P.O. Box 1718, Helena, MT 59624 (1-800-582-2665).

Old Trail Museum: 406-466-5332.

Pine Butte Swamp Preserve: 406-466-5526.

Pine Butte Guest Ranch: 406-466-2158.

Theodore Roosevelt Memorial Ranch: 406-472-3380.

Rocky Mountain Ranger District, Lewis & Clark National Forest: 406-466-5341.

Wildlife Management Areas: 406-467-2646 (Freezout Lake); or 406-454-5840 (FWP Region 4).

Family Fishing Adventures

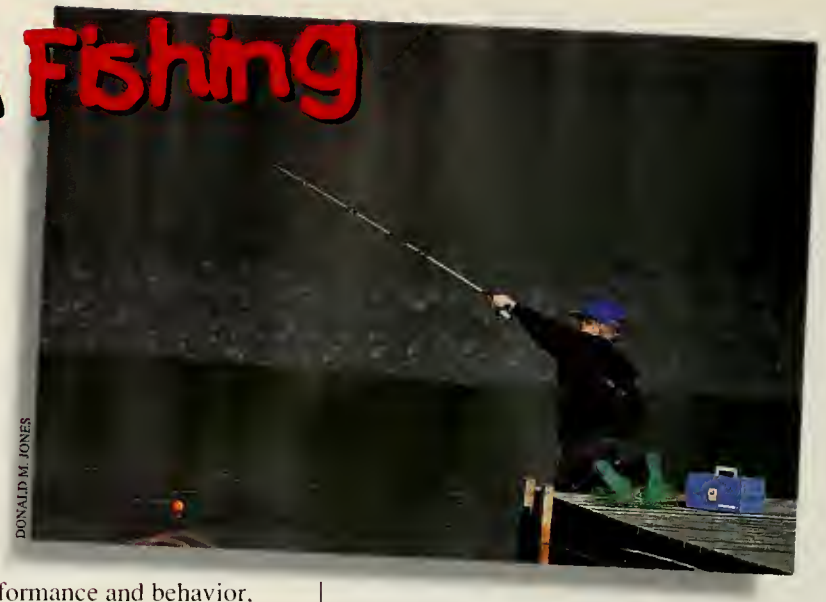
by Dave Hagengruber

Ask most people in Montana, and they'll tell you that they grew up with a fishing rod clasped firmly in their hands. Indeed, fishing is an important component of the quality of life that we enjoy here in the Last Best Place.

So is it possible for someone to live in a state like Montana and not grow up fishing with family and friends? Today's reality is that many youngsters have no opportunity to experience fishing...to learn this avocation so important to those of us who call Montana home.

Concerned with this fact, Montana Fish, Wildlife & Parks Director Pat Graham launched a plan in 1996 designed to eliminate barriers preventing new anglers from getting out on the water. The program–called "Montana's Family Fishing Adventures"–has several components that are being used to keep Montana's fishing traditions alive. Here are a few examples:

Hooked On Fishing


DONALD M. JONES

The next time you visit Red Lodge, don't be surprised to see kids holding fishing rods out on the school playground. Last year, Red Lodge public schools began using the national "Hooked on Fishing, Not on Drugs" program in their fourth and fifth grades. Participating schools receive training and fishing equipment from FWP.

For teacher Dennis Prewett, the choice was a logical one. "Responses from the kids to 'Hooked on Fishing' have just been outstanding," he says. "We decided to try this program since it offers students opportunities long after they leave our classrooms, not just during a nine-month school year. Fishing is a life skill they can enjoy with their families."

In the "Hooked on Fishing" program, fish, fishing, and aquatic resources become a classroom theme. The field experiences act as a reward for good performance and behavior, and serve to motivate.

"It's amazing what fishing can do for these kids," says Prewett. "It teaches problem-solving skills, a means of dealing with peer pressure, and an opportunity to spend time with their families and friends, or just as importantly, alone. Get these kids talking and learning about fish and the environment, and they reach a whole new level of excitement. It's a very effective teaching tool."

Originally, three Montana schools tested "Hooked on Fishing" to determine whether it would be suitable for use statewide. Based on the results, the program was expanded to nearly 40 classrooms last fall. About 10 new schools will be accepted into the program each year.

Free Fishing Day

DAVE HAGENGRUBER

DAVE HAGENGRUBER

Judy Sander, East Evergreen Elementary School, loads her students into a bus on a cold January day. "Everyone got their lunches? Hats? Gloves?" she asks, checking each child for the essentials. Sander and her fourth-grade class are using the "Hooked on Fishing, Not on Drugs" program, and this is one of their much anticipated field trips: fishing through the ice at Church Slough. Their sights are set on yellow perch.

How does Sander, a teacher who admits to having almost no prior fishing experience, manage to keep track of two dozen excited fourth graders? "Lots of help from parents! I've had good success attracting parents on field trips—especially those who would never come into a conventional classroom. The free fishing license exemption really is nice—it makes it easier for them to come along and help out," says Sander. On this day at Church Slough, 11 parents are waiting on the ice to work with her students.

The fishing license exemption Sander refers to is one part of FWP's new "Family Fishing Adventures" program. Established by the 1997 Legislature, the exemption allows FWP to offer free fishing licenses to participants at educational fishing events. It's hoped that the one-day license exemption, which is good only at a specific time and location for those attending an educational event, will encourage more new anglers to try fishing for the first time.

How did Evergreen Elementary's ice fishing trip turn out? They caught about 45 perch, and nobody left their mittens on the bus. Quite a successful trip.

Fishing Instructors

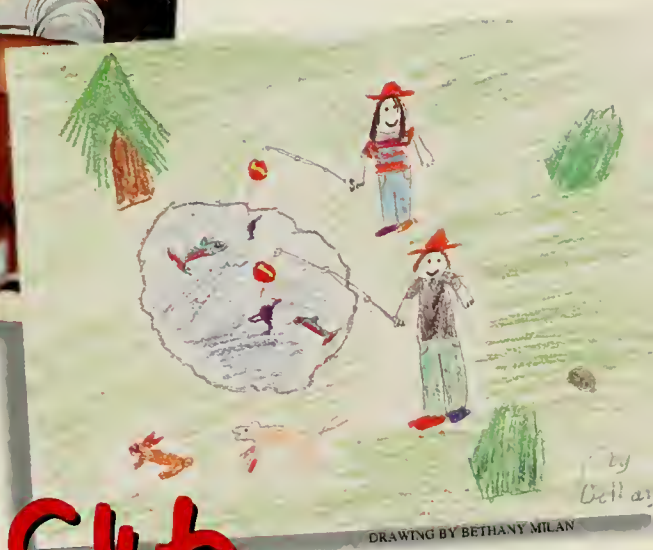
DAVE HAGENGRUBER

Last summer, Don Kelly volunteered his skills as a fly-tying instructor at "Kid's Day on the Big Hole River," combining hooks, chenille, feathers, and lots of patience into a day remembered by all for a long time. For more and more sportmen's clubs, holding a fishing clinic for local kids is becoming an annual event—and a chance for dedicated volunteers like Kelly to share their love of fishing with the next generation of anglers.

"Kid's Day," held at a ranch on the Big Hole River near Glen, is free and open to anyone wanting to attend. Young anglers spend the morning rotating through stations that include casting, aquatic entomology, water safety, fly-tying, and fish identification. After lunch, local guides, FWP game wardens, and instructors load the kids into drift boats and rafts and take them on a float down the scenic Big Hole.

The 30 or more instructors for the event come from all over the region and represent conservation groups like Trout Unlimited and the Big Hole River Foundation. It was Kelly's first experience as a volunteer. "I've been flyfishing for 30 years and this looked like a great way for me to give something back to the sport," says Kelly. "It occurred to me that these kids are the future of our fisheries in this state, and it's important for them to develop a respect for the resource at an early age. This is one way I can make sure that the people I'll be meeting out there on the creek in the future have good ethics."

Kelly was not alone as a fishing instructor. Last year, more than 200 volunteers helped children and their families learn to fish in Montana.



DRAWING BY BETHANY MILAN

M*A*Y Club

Devoted trout anglers belong to Trout Unlimited. The B.A.S.S. Federation is out there for bass fanatics. Are you nuts about walleyes? Go no further than your nearest Walleyes Unlimited chapter. But for Montana kids who love to fish, there hasn't been a group to join—until now.

"My kids received Pennsylvania's fishing newsletter for kids and they absolutely loved it," says John Fraley, FWP's information officer in Kalispell. "I thought, why can't we have a club like that right here in Montana?" With that thought, the Montana Angling Youth, or M*A*Y Club, was born.

"Most of the members are pretty young—from elementary age even down into preschool," adds Fraley. "Three times a year they receive the M*A*Y Club newsletter, and once a year they get a small package of fishing supplies. There are no meetings to attend."

Since it began last year, the M*A*Y Club has blossomed to include more than 2,000 kids. Schools in the "Hooked on Fishing" program contribute many of the articles and puzzles for each issue of the newsletter. Sportmen's clubs in the Flathead Valley have provided financial help for printing and mailing the newsletter; their support, combined with other grants, has made it possible for club membership to be free thus far. "Originally, we wanted to see how much interest this club would draw in the northwest part of the state," says Fraley. Now we're hoping to attract kids from all over Montana. Any kid who loves fishing should be a part of this group."

Montana residents can sign up for the M*A*Y Club by sending their name, address, and age to: M*A*Y Club, FWP, 490 North Meridian Road, Kalispell MT 59901.

Fishing Tackle Loaner Program

So what happens if you want to go fishing, but don't have the equipment? In Havre, there's a simple answer to that question: you borrow a rod and reel from one of the town's tackle loaner sites.

Operating similarly to libraries, tackle loaner sites make basic fishing tackle available free of charge to anyone who needs it. In Havre, borrowing a rod and reel is as simple as signing them out at the front counter of one of the town's two loaner sites—Stromberg's Sinclair Station and Bing & Bob's Sporting Goods. The Havre Chapter of Walleyes Unlimited helps maintain the equipment, which FWP provides free of charge to participating sites.

Other tackle loaner sites are scattered across Montana, and FWP is always looking for good locations to establish new ones. Sort of a network of fishing libraries, you might say. As with any library, the success of the program depends on citizen dedication—and, of course, no overdue items!

CYNTHIA SPENCE

Family Fishing Sites

Phil Stewart, former fisheries manager for FWP's Region 7, is all smiles as he talks about his latest success. "Last year we planted some perch in Cook Lake [Miles City] in hopes of managing the water as a kid's fishery. After we got that first batch of fish in there I was pretty excited—I really thought we would start seeing some kids out fishing the pond." Stewart had no idea just how accurate his prediction would be.

The dilemma of finding locations to introduce new anglers to fishing has been on the minds of Montana's fisheries managers for some time. In fact, places like Cook Lake were just what Jim Satterfield, chief of FWP's Fisheries Management Bureau, had in mind when he initiated the "Family Fishing Sites" program. "For someone new to fishing, the most important thing is to catch a fish—any fish," says Satterfield. "They don't need a 20-inch rainbow or a 10-pound walleye. A six-inch perch works just fine."

For Stewart, the public response to his efforts has been especially encouraging. "I've received more positive comments over managing that pond as a kid's perch fishery than almost anything I've done in my 15 years as fisheries manager in Miles City," he says. "Even though the pond only exists for three or four months each year [it is fed by water pumped from the Tongue River and generally goes dry by October], I was amazed at how many kids were down there fishing."

Satterfield hopes to find more locations like Cook Lake. "We've asked our managers across the state to develop fisheries for beginning anglers, particularly ponds that can be reached by kids walking or riding their bicycles," he says. "We're lucky in this state to have incredible fisheries resources, but we need to be sure there are places where dad or mom can grab a can of worms and go catch some fish with their kids."

Phil Stewart, who retired from FWP in February, sums it up this way: "I just think it was neat to see a project like this take off in Miles City. It was something we needed around here." ■

DRAWING BY LIBBY GURNETT

To find out how to participate or learn more about any aspect of the "Family Fishing Adventures" program, contact:

Dave Hagengruber
FWP Angler Education Specialist
1420 E. 6th Ave.
Helena MT 59620
406-444-9736.

ROCK CREEK:

ROCK CREEK TRUST/MICHAEL GALLACHER

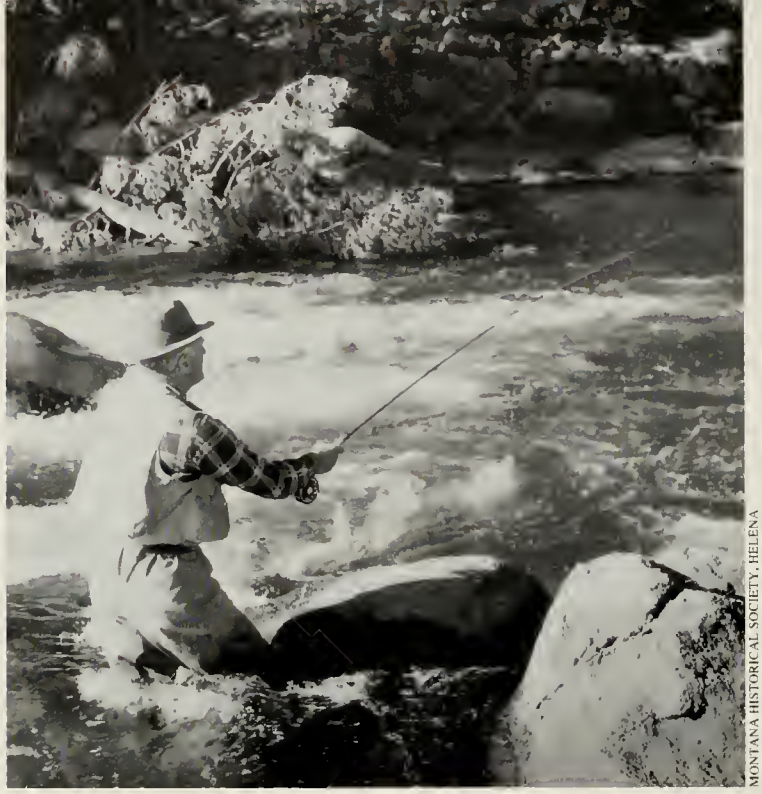
A Conservation Success Story

A conservation easement on the Castle Rock Ranch is the latest in a series of innovative land transactions designed to protect the scenery, wildlife, and water quality of this blue-ribbon trout stream.

by ELLEN KNIGHT

KAREN PETERSON and her husband Sam help run the family ranch in Rock Creek with her father, Jim Gillies. Karen, who has her own new daughter, Janelle, remembers sitting on her grandmother's lap as a child. "She told me she always wanted this land to be here for me," says Karen.

Karen's grandmother, Martha Gillies, and her husband Joe, homesteaded the Castle Rock Ranch in 1886 when ranches were just beginning to be carved out of the upper Rock Creek valley a few miles west of Philipsburg. There, with the snowcapped crags of the Anaconda-Pintler Mountains for a backdrop, three generations of the Gillies family have been ranching ever since. And although times and ranching practices have changed, Karen's grandmother's wishes have come true.



MONTANA HISTORICAL SOCIETY, HELENA

Well-known angler-author Joe Brooks regularly visited Rock Creek in the 1950s and 1960s, helping solidify its fame.

It's easy to see why the family loves their land—the Castle Rock Ranch is a spectacular place in the heart of a renowned watershed. Now, thanks to the Gillies family and the strong teamwork of the nonprofit Rock Creek Trust and Montana Fish, Wildlife & Parks (FWP), the ranch will remain whole in perpetuity. Last October a conservation easement was finalized to protect the ranch's considerable conservation values—1,554 acres of open space, dramatic scenery, blue-ribbon fishing water, riparian habitat with moose and migratory songbirds, and upland grasses that support one of the finest bands of bighorn sheep in the nation. In addition, the family can keep right on ranching.

The easement, acquired with a combination of funding from the Rock Creek Trust, FWP's Habitat Montana program, and bighorn sheep auction monies, is held by FWP, which pleases director Pat Graham. "Montana leads the nation in acres protected under conservation easement," Graham says. "This work couldn't be accomplished by any single entity, but requires a collaboration of efforts—public and private partnerships as exemplified by the Castle Rock Ranch easement acquisition. We are particularly pleased because this project provides habitat for fish and wildlife, recreational access opportunities, and the open space that is so important to the Rock Creek drainage."

He notes the accomplishments of conservation easements are not measured in ordinary terms but in terms of what you don't see on the land. In the case of the Castle Rock Ranch, what you see 30 years or 50 years down the line will not be much different from what you see there today. This is not the first time that FWP and the Rock Creek Trust have teamed up in such an effort. Numerous joint projects over the past decade have worked to the benefit of Rock Creek.

The story of the Rock Creek Trust's creation and work make an interesting conservation case study—it has turned out to be one way to protect a river. For decades, Rock Creek's fame as a trout fishing stream and wildlife paradise has inspired landowners, individuals, and conservation groups to leap to its defense whenever a new threat emerges. Many groups, like the Montana Fish and Game Association and Trout Unlimited, have had an ongoing commitment to protecting the drainage.

Gary Eudaily, a long-time cabin owner in Rock Creek, remembers when fishing greats like Lee Wulff, Dan Bailey, Joe Brooks, and Charley Waterman would come to Rock Creek for a week or more each summer, helping to solidify Rock Creek's fame. So, it was natural that in the late 1960s, when the U.S. Forest Service planned extensive logging in the drainage, that Rock Creek became a hotbed of vigilance for people with fishing and hunting interests.

Tom Huff, a Trout Unlimited member, put the battle into perspective. "Of all the fisheries within a reasonable proximity of Missoula, Rock Creek is the most extraordinary—a pristine, beautiful, productive fishery. But there was no mechanism in the Forest Service to listen to concerns. They hadn't thought about any values other than cutting trees and didn't know how to cope with public opinion or amenities like fishing. No one had ever questioned Forest Service actions. Rock Creek, with its cadre of citizens wanting to protect fishing, hunting, and water quality, became a key proving ground for bringing the NEPA [National Environmental Policy Act] process, with its mandate for public participation, into standard use in the Forest Service."

Huff and Eudaily recall that the final decision in a debate that raged for three years came down to this: maintaining Rock Creek's water quality was the bottom line. Any resource activities had to be filtered through that screen before

the Forest Service should allow it.

But as Eudaily points out, "Rock Creek is a place where you could never let your vigilance down for very long." So in 1984 when huge regional powerlines were planned to cross the lower part of the drainage, it was not surprising that three groups quickly galvanized into action and appealed the proposed routing of the lines across the famous fishing stream and wildlife habitat in five potential wilderness areas. While the groups did not succeed in rerouting the lines, the Montana Wildlife Federation, the National Wildlife Federation, and the West Slope Chapter of Trout Unlimited came away with $1.65 million in mitigation monies that would be held in trust and dedicated to conservation activities in the Rock Creek drainage.

The settlement agreement created the Rock Creek Advisory Council, whose job it was to evaluate and oversee expenditures from the fund to further conservation throughout the Rock Creek drainage. Specifically, the emphasis was to be on acquiring conservation easements.

The council's membership consisted of representatives of the three conservation groups plus two landowners and, because of their support roles during the appeal process, a representative each from the Department of Natural Resources and Conservation and Montana Fish, Wildlife & Parks.

The Rock Creek Trust was originally created as a quasi-governmental organization administered by the Department of Natural Resources and Conservation. Although that arrangement worked well enough, structurally it was confusing—"quasi-governmental" was simply a difficult term to explain to landowners or anybody else. In 1995 the trust became part of the Five Valleys Land Trust, a private, nonprofit land trust housed in Missoula, and the Rock Creek Advisory Council became, simply, the Rock Creek Council. The Rock Creek Trust's mission remained exactly the same: to protect the conservation values in Rock Creek, primarily through the use of conservation easements.

To date, the trust, either alone or with partners, has protected over 4,600 acres and 11.5 miles of stream frontage in Rock Creek. Each easement is different, designed to meet the needs of the landowner and to protect the specific characteristics of each piece of land.

"The Rock Creek Trust works only in Rock Creek," says John McBride, chair of the Rock Creek Council. "We need to be able to work with all kinds of landowners who have varying goals if we are to make our drainage-wide conservation goals work for everyone." He adds that the body of the trust's work shows how this has been accomplished over the last decade.

Thanks to the cooperative efforts of the Rock Creek Trust, its partners, and area landowners, conservation easements now protect more than 4,600 acres and 1.5 miles of stream frontage in the Rock Creek drainage.

The two earliest projects of the trust were fee title purchases of two of the largest remaining parcels in the lower drainage. There was serious discussion about whether the council wanted to own—and manage—property. Given that there was an important opportunity at hand, however, the decision was made to proceed. "We decided it would make sense in the long run to purchase with the intent to pass the property along to someone else—a private landowner," says Carol Fischer, the first chair of the council.

So in 1987, the trust purchased 130-acre Spring Creek Woods in partnership with FWP and a conservation easement was designed. The protected property was eventually traded to an upper Rock Creek landowner in exchange for a conservation easement on a large ranch.

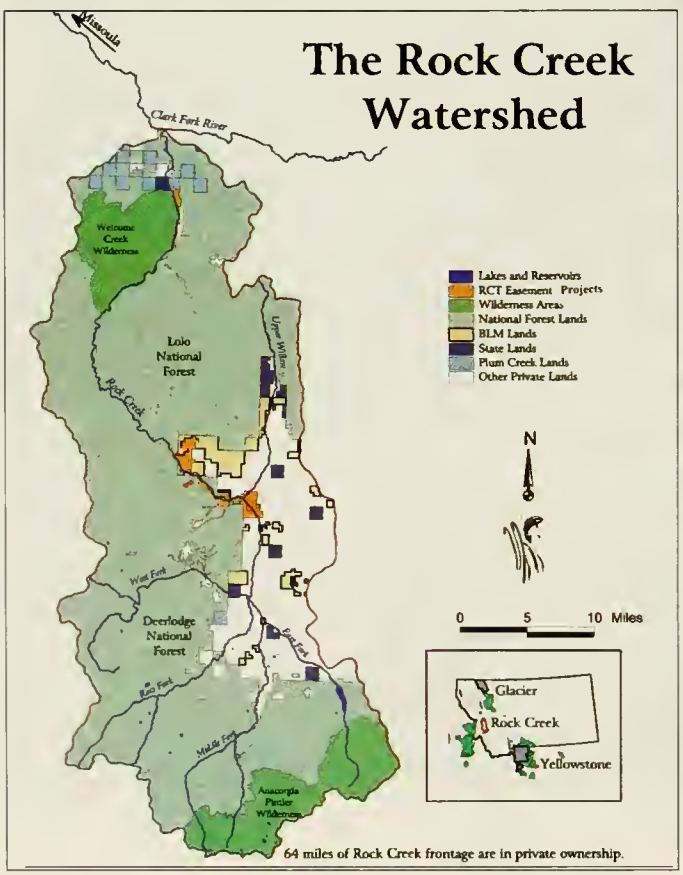
The neighboring 244-acre Handley Ranch was purchased by the trust in 1989. This project involved an innovative series of transactions—a land trade, the purchase, the creation of a conservation easement with a life-estate for a family member who wished to stay on the ranch, and the eventual resale of the land to a private buyer. Both the Handley Ranch and Spring Creek Woods are now owned by private individuals who have built their own homes on their properties. No subdivision is permitted under the terms of the easements.

Another key parcel, 164 acres at the mouth of Rock Creek, was about to be subdivided in 1991. The long-time landowner was unable to take advantage of a conservation easement for a variety of reasons. Greg Tollefson, then council chair, was able to work with new buyers and put an easement in place. "This turned out to be a 'win-win' situation for the landowner and the eventual purchasers," recalls Tollefson. "We were able to bring together a landowner who needed to sell and conservation-minded buyers who were willing to accept perpetual restrictions that would assure the protection of the natural and scenic values so important at the entrance to the Rock Creek watershed."

In the trust's early days, the Helena-based Montana Land Reliance was another frequent partner because the trust's quasi-governmental status prevented it from holding the easements it obtained. John Wilson, conservation director for the reliance, helped find buyers for the property at the mouth of Rock Creek and craft the easement that is in place today.

The trust and Montana Land Reliance also teamed up to make conservation inroads in the upper Rock Creek drainage. Bob and Evelyn Neal of the T-Heart Ranch, 30 miles upstream from the mouth, took the first step, placing over 900 acres and five miles of Rock Creek stream frontage under easement in 1992. The Neals, a third-generation Rock Creek ranching family, are advocates for using conservation easements in the area to help keep open ranch land productive. In 1997 they placed another 160 acres of their ranch along Stony Creek under easement. After some initial skepticism, Bob Neal has become a strong advocate of private land protection with conservation easements. "I'm in as good a position as anybody to speak on behalf of conservation easements. I encourage others to consider them, too," Neal says.

Two neighboring landowners followed Neal's advice. In 1993 Ed Elliott placed a conservation easement on the 1,364-acre Rock Creek Ranch, just downstream from the Neal



ROCK CREEK TRUST/MICHAEL GALLACHER

ROCK CREEK TRUST/MICHAEL GALLACHER

Rock Creek is home to deer, elk, moose (left), and a world-class herd of bighorn sheep (above).

ROCK CREEK TRUST/MICHAEL GALLACHER

Since the 1970s, hunters and anglers have rallied to protect Rock Creek from extensive logging and development. In the 1980s, a $1.65 million settlement to mitigate powerline impacts led to formation of the Rock Creek Council and Rock Creek Trust.

property. Elliott, a 20-year Rock Creek landowner, wanted to assure that the important wildlife values of his ranch remained protected and the property intact.

Then Dr. Phil Wright placed an easement on his nearby 34 acres at the mouth of Shively Gulch. Wright, a renowned ornithologist and Record Keeper Emeritus of the Boone and Crockett Club, had a deep affection for his place on Rock Creek and wanted to make sure the aspen grove and the wildflower meadow with its beaver pond and moose habitat would always remain as he knew them. Dr. Wright died in 1997, but not before his dream for the property was assured.

The Rock Creek Ranch, Ed Elliott's property, contained significant timber resources in addition to native grassland critical to the world-class herd of bighorn sheep that frequent the ranch. His question to the Rock Creek Advisory Council was this: Could he put an easement in place to protect the conservation values and still harvest timber if he should need the revenue some day?

The council said yes, as long as the timber harvest plan took into account the needs of the bighorn sheep, elk, and mule deer, and as long as the plan also considered the landscape of the adjacent public land proposed for wilderness designation. Elliott agreed and a site-specific timber harvest plan was designed for inclusion in the easement.

Financial questions about future use of the land often arise when landowners consider placing a permanent conservation easement on their land. Ron Spoon and Jodie Canfield, both professional biologists, own 58 acres at the confluence of the East and Middle forks of Rock Creek. They came to the trust in 1995 wanting to know more about conservation easements and how they work.

"We were interested in the long-term stewardship of the biological components, but we were also interested in being able to live on the land," says Jodie Canfield. "What we wanted to see was whether the conservation easement would allow us to do that and also allow us to make a living if we ever wanted to have a permanent residence in Rock Creek." Working with Spoon and Canfield, the Rock Creek Council created an easement that allows a variety of compatible economic uses while still protecting open space and key biological elements of the land.

The council has also worked with landowners to protect smaller parcels of land along the creek, especially in areas that are subject to intense pressure from subdivision and residential development. Kim Reineking, one of the current Trout Unlimited representatives on the council, donated an

easement on his six-acre parcel in the lower drainage in 1996. Reineking joined four other neighbors (A.J. Michnevich, Hope and Jock Schwank, Sue and Marcelo Norona, and one anonymous landowner), to help protect the remaining open space. "As a council member, I was eager to donate my easement. I didn't want to see my own parcel further divided, and I was very pleased to join a number of my neighbors who felt the same way," Reineking says.

The decision to assist owners of smaller parcels with conservation easements took the council into new territory, but it made sense for the drainage-wide conservation goals of the Rock Creek Trust. McBride, the council chair, explains the decision this way. "Our attitude toward small parcel protection is that for the lower drainage it is just about as

AL TROTH

Protecting water quality and streamside habitat are essential in maintaining Rock Creek's blue-ribbon trout fishery.

important as protecting those larger ranches in the upper drainage. For years people have come to Rock Creek's defense. Lower Rock Creek is the entry point for many Rock Creek visitors. But, because of its proximity to Missoula, it also has more development. If it becomes thoroughly developed, we're afraid Rock Creek will lose some of its open space appeal, as well as some of those dependable advocates who have been so important in fighting the good fight for the drainage. While the trust can't protect all the smaller pieces, we certainly do encourage neighbors to work together with us to help keep the open feeling in the lower drainage just as Kim and A.J. Michnevich and their neighbors have done."

Now comes the most recent work of the Rock Creek Trust, the completion of the easement on the Castle Rock Ranch with the Gillies family in upper Rock Creek. With 1.5 miles of Rock Creek stream frontage, including the Willow Creek confluence, the protection of this 1,554-acre ranch forms a critical link with lands already protected by conservation easements immediately downstream.

The family approached the Rock Creek Trust to discuss an easement on the ranch for a number of reasons: There are three family member owners and two of them live away from the ranch, and there were three daughters to consider. It was time to think about estate planning—how do you provide for off-ranch family members when your major asset is land?

For families with land, times of transition are often the time when conservation easements are considered. And then there was history and a love of the land. Jim Gillies puts it simply. "Basically, we're trying to keep this land in the ranching business rather than the subdivision business." Estate and income tax benefits, combined with partial payments for the easement, helped solve the problem.

This large project wouldn't have been possible without the strong partnership of the Rock Creek Trust with Montana Fish, Wildlife & Parks. Public access, not a requirement in all conservation easements, was a part of this one. It was key in obtaining $500,000 from FWP's bighorn sheep permit fund and $100,000 from the fishing access fund. The trust added $314,000 portion to the total, confirming protection for the rest of the ranch.

In addition to the original trust funds, the Rock Creek Trust has had a generous number of donors, ranging from individuals and foundations to landowners who have made significant individual donations as part of the easement process. As a result, the trust has been able to leverage the initial funding into far more dollars in on-the-ground conservation.

Although the fund remains healthy today, it has diminished over the years. Designed as an "expendable" trust, the money has been spent on getting the conservation work done. Tom France, an attorney with the National Wildlife Federation, helped fight the original battle and negotiate the settlement that resulted in the Rock Creek Trust. "We never expected that this much land protection would have been accomplished with the funds we obtained. The trust and the council have been good stewards and the intended goals are being achieved," France says today.

But a lot of work remains. "Other landowners are interested," says the council's John McBride. "We're embarking on a major fund-raising drive and we are always looking for partners. We still have a number of very specific conservation goals for Rock Creek, and we intend to achieve them."

According to McBride, those goals are focused on keeping much of the Rock Creek drainage just as it is today. "Rock Creek is a remarkable place and is important regionally and nationally as part of the wild lands that extend all the way down the Rocky Mountains from Canada to Yellowstone Park."

People who love Rock Creek agree. ■

Anyone interested in helping protect Rock Creek can contact the trust at P.O. Box 8953, Missoula, MT 59807, or call 406-728-2841.

Bad News Bears

photography by Donald M. Jones

The old saying, "I may have been born in the dark, but I wasn't born yesterday," applies—figuratively and literally—to Montana's black bear cubs when they emerge from their dens in the spring. Although they are born blind, toothless, and nearly hairless—weighing only about a pound—in mid-winter, they grow quickly. By the time they leave the den with their mother in April or May, they weigh about five pounds, have hair, teeth, and claws, and can run and climb. Scientists describe them as "active" and "precocious," but words like rambunctious and mischievous seem to apply.

Maturing in the safety of the den for three months gives black bear cubs a leg up on survival when they emerge into a world of predators (including other bears) and spring food scarcity.

Although young cubs can eat plants and insects, they continue to nurse for several weeks.

Black bears are not always black—they vary in color from black to brown to light cinnamon.

First-time mothers typically give birth to one cub, but after that two or three cubs are more common.

Sharp claws and climbing skills allow cubs to scurry up a tree at the first sign of danger.

In fact, a tree is a pretty safe place for a nap.

GLACIER INSTITUTE: THE FIRST FIFTEEN YEARS

In the early 1980s, two people with a love for the natural environment and concern about its future met and shared long-standing dreams of a Glacier National Park-based institution that would educate people about the region and help promote its protection. Geologist Lex Blood and biologist Ursula Mattson began shaping the common vision that became the Glacier Institute.

Mattson, resident and researcher in the region since 1961, felt educating people was a way she could repay the area for which she had developed a strong emotional attachment. Blood, a Flathead resident since 1973, says, "Education is so critically important to bring about understanding and resolution of conflicts existing in our use of the natural environment."

With initial support from Glacier National Park, Flathead Valley Community College and the Glacier Natural History Association, the Glacier Institute became a reality in 1983 and the following summer nine classes convened.

Today, the institute enjoys the support of two additional cooperating agencies: the Flathead National Forest and Montana Fish, Wildlife & Parks. Over 50 adult field courses are offered each year, as well as teacher workshops, youth science camps, and residential school programs for grades K-12. From "Glacier's Harlequins" to "Wild Medicinal Herbs," all institute programs take participants into the field to experience firsthand the rich natural and cultural heritage of the Glacier area. Two residential facilities, the Glacier Park Field Camp and Big Creek Outdoor Education Center, serve as home base for Glacier Institute programs.

Institute instructors, many of them internationally known in their field, include seasonal park rangers, research biologists and ecologists, artists, writers, and historians. All have intimate familiarity with their subjects and the region.

Volunteers, too, fill a vital niche in institute activities. A 15-member board of directors and more than 40 committee members donate their time and resources to help further the institute's mission. In addition, many on-site volunteers enrich programs with their unique experiences and talents.

MALINDA CRAWFORD

The Glacier Institute offers more than 50 field courses each year to adult students from around the country.

To help celebrate its fifteenth year, the Glacier Institute has plans for a number of anniversary events and programs. To learn more about institute courses and this year's activities, write to P.O. Box 7457, Kalispell, MT 59904; 406-755-1211.—*Rima Nickell*

MONTANA STATE PARKS CALENDAR

MAY

16-17—Flathead Lake Paddlefest
Try different types of sea kayaks at Flathead Lake State Park, Wayfarers Unit, in Bigfork. Call 406-752-5501.

17, 23—Canoe Demo Days at Frenchtown State Park
Demonstrations with new state-of-the-art canoes and kayaks take place from 10:00 a.m. to 4:00 p.m.

23—Bannack Guided Tours Begin
Call for tour schedule: 406-834-3413.

23-24—Memorial Day Weekend "Loon and Fish Festival" in Seeley Lake
Art show, craft sale, guided bird walks, loon talks, and calling contest.

29—Evening Campfire Talks begin at Lewis and Clark Caverns
Talks feature historical and natural resource topics. Call 406-287-3541.

JUNE

4—Evening Campfire Programs Begin at Makoshika State Park
Thursday night talks include paleontology, geology, and history. Call 406-365-6256.

6—Nature Movies at Lone Pine State Park Visitor Center
Movies at the visitor center from 10:00 a.m. to 2:30 p.m.

7—Saturday Night Campfire Talks at Missouri Headwaters State Park
Programs begin at 7:00 p.m. each Saturday. Call 406-994-6934.

13—Buzzard Day at Makoshika
Fun runs, "turkey shoot," nature walks, and activities for the whole family. Call 406-365-6256.

18—Makoshika Youth Program for ages 7-13
Scheduled each Thursday from June 18 through July. Call 406-365-6256.

23—Discovery Days at Spring Meadow Lake State Park
Scheduled every Tuesday for seven weeks. Educational programs for 8 to 12 year olds. Call 406-449-8864, ext. 154.

27—Evening Campfire Talks Begin at Salmon Lake State Park
Saturday night talks include historical and natural resource topics. Call 406-542-5533.

Jack Housel, Jr., with his record rainbow trout.

Blaine Grisak, age 4, admires his mottled sculpin.

All Fishes Great and Small

by Dave Books

For dedicated angler **Jack Housel, Jr.**, of Libby, 1997 was a roller-coaster ride. On August 11, fishing from his favorite rock along the Kootenai River above David Thompson Bridge, he landed a trout weighing a tad over 33 pounds and measuring almost 40 inches in length—it looked like a state record rainbow trout, but was it?

Because rainbow and cutthroat trout hybridize, the fish had to be genetically analyzed to determine its taxonomic status. Either way, Housel's fish was destined for the record book, because it exceeded the existing records for both rainbow trout and rainbow-cutthroat hybrids. If proven to be a rainbow, however, Housel's fish would also be a world record, besting the existing mark by more than a pound. After two months of suspense, the word came back from the lab: rainbow trout.

For the next five months, Housel's rainbow stood as an all-tackle world record. But the roller-coaster ride wasn't over. In February, the National Fresh Water Fishing Hall of Fame, which verifies records from its headquarters in Hayward, Wisconsin, accepted a 37-pound rainbow caught in 1947 in Lake Pend Oreille, Idaho, as a new world record. According to Hall of Fame officials, new information emerged to validate this fish. Housel's rainbow remains as a Montana record and a world record in the 25-pound line class.

Interestingly, notes Housel, if it hadn't been for a treble hook separating from his lure, he might have broken his own state record just a few months later and rendered the world record dispute moot. Fishing from the same rock, with the same 1-ounce Pot-of-Gold lure, he hooked an even bigger fish. "I fought it for an hour and a half," he says, "but I was alone and couldn't get it in the net. It was at least as big and probably bigger than my earlier fish."

Like Jack Housel, Bozeman angler **Blaine Grisak** made a record catch in 1997. But Grisak's fish, a 0.03-pound mottled sculpin, would barely have made a snack for Housel's rainbow. New to the fish records list, the mottled sculpin is a native species that lives primarily in cold streams. According to *A Field Guide to Montana Fishes*, by George D. Holton and Howard E. Johnson, "sculpins are small, bottom-dwelling...fishes with large, flattened heads and fanlike pectoral fins." Celebrating his fourth birthday on the day he caught his sculpin in Sheep Creek (Meagher County), Blaine was fishing with his dad. The 3.9-inch sculpin fell for a young angler's best friend—an earthworm.

One other fish was added to the records list in 1997: the tiger trout. This unusual hybrid—a cross between a brook trout and brown trout—has the markings of a tiger or giraffe. Bozeman resident **Joe Sobczak** caught his 4.04-pound trout on a Woolly Bugger with maggot while ice fishing in Bear Lake in the upper Big Hole drainage.

Two other record fish were taken in 1997. **Robert Reishus** of Dupuyer, fishing with bow and arrow, edged the existing carp record with a 39.77-pound specimen from Eyraud (sometimes spelled Arod) Lakes. The previous record was a 38.50-pound fish taken in 1986 from the same water.

Bainville angler **Vernon Pacovsky** stayed close to home to land a state record white bass. His fish, taken on a minnow in Bainville Slough, weighed 1.79 pounds, besting the existing record by more than half a pound. White bass are not native to Montana but made their way upstream into portions of the Missouri River drainage in eastern Montana from Lake Sakakawea in North Dakota.

What should you do if you think you've caught a state record fish? First, you must catch the fish legally. Second, you must weigh your fish before witnesses on a government-inspected scale such as those found in most grocery stores. Weighing it as soon as possible is a good idea, since fish rapidly lose the precious ounces that can spell the difference between a record and a runner-up. Third, an FWP employee must positively identify the fish. It's also a good idea to take color photos of the fish to help resolve any identification problems.

Montana's Record-Setting Fish (1997)

Species	Weight	Angler	Year	Location
Arctic grayling	3.21 lbs.	Frederick C. Dahl	1994	Handkerchief Lake
Bigmouth buffalo	57.75 lbs.	Craig D. Grassel	1994	Nelson Reservoir
Black bullhead	2.33 lbs.	Darwin Zempel, Jr.	1994	Lower Flathead River
Black crappie	3.13 lbs.	Al Elser	1973	Tongue River Reservoir
Blue sucker	11.46 lbs.	Doug Askin	1989	Yellowstone River (near Miles City)
Bluegill	2.64 lbs.	Brent Fladmo	1983	Peterson's Stock Dam
Brook trout	9.06 lbs.	John R. Cook	1940	Lower Two Medicine Lake
Brown trout	29.00 lbs.	E.H. "Peck" Bacon	1966	Wade Lake
Bull trout	25.63 lbs.	James Hyer	1916	unknown
Burbot (ling)	17.08 lbs.	Jeff E. Iwen	1989	Missouri River (near Wolf Point)
Carp*	**39.77 lbs.**	**Robert Reishus**	**1997**	**Eyraud Lakes**
Channel catfish	25.89 lbs.	Gordon Wentworth	1984	Fort Peck Reservoir
		Tom Hilderman (tie)	1988	Fort Peck Reservoir
Chinook (king salmon)	31.13 lbs.	Carl L. Niles	1991	Fort Peck Reservoir
Cisco	1.46 lbs.	Jim Liebelt	1990	Dredge Cut Trout Pond
Coho salmon	4.88 lbs.	Irven Stohl	1973	Fort Peck Reservoir
Cutthroat trout	16.00 lbs.	William D. Sands	1955	Red Eagle Lake
Flathead chub	0.31 lbs.	Matt Sloat	1996	Missouri River (Fred Robinson Bridge)
Freshwater drum	20.44 lbs.	Richard C. Lee	1987	Fort Peck Reservoir
Golden trout	4.90 lbs.	Carl Radonski	1993	Lightning Lake
Goldeye	2.91 lbs.	Vance "Bubba" Kielb	1989	Irrigation canal (west of Malta)
Green sunfish	0.56 lbs.	Roger Fliger	1991	Castle Rock Reservoir
Kokanee (salmon)	5.94 lbs.	Forrest Johnson	1976	Pishkun Reservoir
Lake trout	42.00 lbs.	Dave Larson	1979	Flathead Lake (east shore)
Lake whitefish	10.08 lbs.	Theo Hamby	1995	Lower St. Mary Lake
Largemouth bass	8.16 lbs.	Juanita A. Fanning	1984	Milnor Lake
Largescale Sucker	5.06 lbs.	Loren Kujawa	1996	Kootenai River
Longnose sucker	3.27 lbs.	Ray Quigley	1988	Marias River
Mottled Sculpin**	**0.03 lbs.**	**Blaine X. Grisak**	**1997**	**Sheep Creek (Meagher Co.)**
Mountain whitefish	5.09 lbs.	Mervin "Frog" Fenimore	1987	Kootenai River
Northern pike	37.50 lbs.	Lance Moyler	1972	Tongue River Reservoir
Northern squawfish	7.88 lbs.	Darrel Torgrimson	1991	Noxon Rapids Reservoir
Paddlefish	142.50 lbs.	Larry Branstetter	1973	Missouri River
Peamouth	0.64 lbs.	Gordon Stewart	1991	Ashley Creek
Pumpkinseed	0.95 lbs.	Tim Colver	1985	Milnor Lake
Pygmy whitefish	0.16 lbs.	Orlin Iverson	1982	Ashley Lake
Rainbow trout*	**33.1 lbs.**	**Jack Housel, Jr.**	**1997**	**Kootenai River (David Thompson Bridge)**
Rainbow-cutthroat hybrid	30.25 lbs.	Pat Kelly	1982	Ashley Lake
River carpsucker	3.50 lbs.	James Jessen	1991	Yellowstone River near Terry
Rock bass	0.57 lbs.	Don Holzheimer	1989	Tongue River Reservoir
Sauger	8.81 lbs.	Gene Moore	1994	Fort Peck Reservoir
Shorthead redhorse sucker	4.68 lbs.	Ray Quigley	1985	Marias River near Loma
Shortnose gar	3.06 lbs.	John Johnson	1977	Fort Peck dredge cuts
Shovelnose sturgeon	13.72 lbs.	Sidney L. Storm	1986	Missouri River
Smallmouth bass	6.10 lbs.	Mike Otten	1996	Fort Peck Reservoir
Smallmouth buffalo	32.63 lbs.	Richard Liesener	1994	Nelson Reservoir
Stonecat	0.54 lbs.	Dale Bjerga	1996	Milk River
Tiger muskellunge	27.00 lbs.	Dan Dupea	1994	Lebo Lake
Tiger Trout**	**4.04 lbs.**	**Joe Sobczak**	**1997**	**Bear Lake**
Utah chub	1.81 lbs.	Eugene Bastian	1992	Canyon Ferry Reservoir
Walleye	16.38 lbs.	Steven McMorris	1996	Cooney Reservoir
White bass*	**1.79 lbs.**	**Vernon Pacovsky**	**1997**	**Bainville Slough**
White crappie	3.68 lbs.	Gene Bassett	1996	Tongue River Reservoir
White sturgeon	96.00 lbs.	Herb Stout	1968	Kootenai River
White sucker	5.33 lbs.	Fred Perry	1983	Nelson Reservoir
Yellow bullhead	0.84 lbs.	Mike Vaughn	1996	Conter's Bass Pond
Yellow perch	2.37 lbs.	Vernon Schmid	1988	Ashley Lake

***New Montana record for 1997** ****New to Montana's record list**

SUNNYSLOPE GRAYLING DEFY THE ODDS

by Bruce Auchly
Region 4 Information Officer
Conservation Education Division

Imagine a pair of grizzlies living in an urban backyard. Imagine pallid sturgeon flourishing in a rancher's stock tank. Imagine Arctic grayling surviving year after year in an irrigation ditch.

Okay, forget the first two as flights of fancy. But the last improbable scenario is true. A sparse yet self-sustaining population of Arctic grayling has survived for decades in the Sunnyslope Irrigation Canal. The canal spills out of Pishkun Reservoir, which lies between Choteau and Augusta along the East Front of the Rockies, and runs 32 miles to Fairfield. Greenfields Irrigation District operates the canal, which serves the farms and ranches of the Fairfield bench.

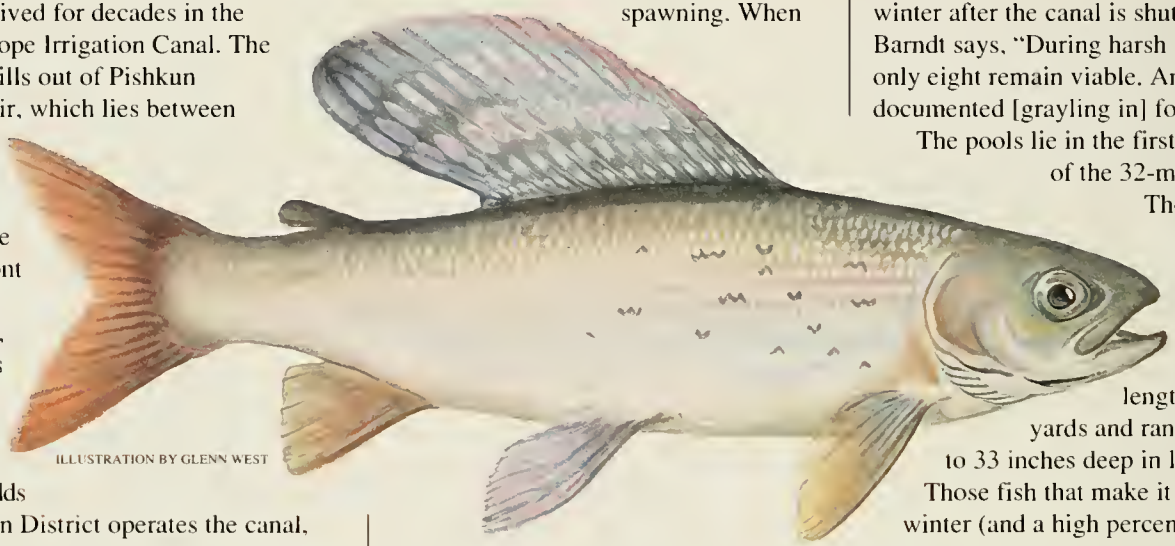


ILLUSTRATION BY GLENN WEST

"The grayling are unique in the fact that they exist," Scott Barndt says. Currently with the U.S. Fish and Wildlife Service in Washington, Barndt earned his master's degree in 1996 from Montana State University (MSU) studying the Sunnyslope grayling. "They are the only known population that has been started from scratch in at least a partially fluvial, or river, environment."

The Arctic grayling is one of the odder citizens of the freshwater fish world. Sometimes mistaken for its lowly cousin the mountain whitefish, it has a small, slender body. The current state record grayling, caught in Handkerchief Lake near Columbia Falls, weighed 3.21 pounds. But atop the grayling's sleek, silver-flecked body sits a large dorsal fin swathed in iridescent shades of blue and green, even tinges of pink and orange. The male grayling's back fin looks as out of place as a tie-dyed sail on a Confederate blockade runner. Yet the colorful back fin serves its evolutionary goal—procreation.

Barndt says the male's dorsal fin serves three purposes: to ward off rival males, attract spawning females, and hold females during spawning. When male grayling are setting up their territories before spawning, they elevate their fin to impress and scare competitors. Once in place, the males hope to attract females to their territory. "Males will display their fin and hope that the bigger females with a better chance of survival will respond," Barndt says. In the fish world, bigger females are good. They produce more eggs, and they have survived several growing seasons, an indication of good genes. And luck, too. Finally, when a female comes alongside a male to release her eggs, the male will fold his dorsal fin over her to hold her, then release his sperm to mix with the eggs.

The purpose of the female Arctic grayling's oversized dorsal fin is less clear. While it is not as big as the male's, it is still larger than that of other members of the trout family. If it is for swimming in strong currents, then for seven months of the year in the Sunnyslope Canal, the grayling's tall dorsal is about as useless as, well, a fish out of water. That's because from October through May the canal's few hundred grayling live in 13 pools and puddles fed by a trickle of water leaking through the canal gates in the reservoir dike and from springs in the canal bed.

"Thirteen pools remain through the winter after the canal is shut down," Barndt says, "During harsh winters only eight remain viable. And I only documented [grayling in] four."

The pools lie in the first 3.6 miles of the 32-mile canal. The four main pools that hold grayling have a combined length of 376 yards and range from 9 to 33 inches deep in late winter. Those fish that make it through the winter (and a high percentage do) find water, water everywhere by the middle of May when the irrigation district turns on the tap. At a maximum flow of 1,677 cubic feet per second (cfs) the canal has a flow equivalent to the lower Madison River in summer. "We're not talking about some little ditch," says Cal Kaya, MSU biology professor and Barndt's advisor. "We're talking about a large volume of water."

In the five brief months of abundant water, the Sunnyslope grayling must reproduce and the offspring must survive, grow, and prepare for the coming winter crammed into aquatic tenement houses. "Grayling in the Arctic do very similar things," Barndt says. "They'll move hundreds of miles between river systems. Then, fish from different populations and different rivers will converge and overwinter at the same

BRUCE AUCHLY

Tiny radio transmitters (below) implanted in Arctic grayling allow researchers to monitor movements and spawning behavior. At left, Scott Barndt radio-tracks grayling in the Sunnyslope Irrigation Canal as part of his master's degree project at Montana State University.

BRUCE AUCHLY

spring. In the Arctic, rivers will freeze solid except at these springs."

The Arctic grayling, a native Montana member of the trout family, was first described by Lewis and Clark. Worldwide there are four grayling species: one in Europe, two in Asia, and the Arctic grayling, which once ranged from Siberia to Alaska through much of Canada and south into Michigan and Montana. The Michigan grayling population became extinct by 1936.

Isolated by glaciers 12,000 to 15,000 years ago, Montana's grayling population held sway in rivers and streams in the upper Missouri River drainage above the Great Falls. Most lived in the Gallatin, Jefferson, and Madison rivers and their tributaries and a few remote locations like the Smith and Sun rivers. Lake-dwelling grayling existed only in upper and lower Red Rock lakes and possibly Elk Lake, near the headwaters of the Red Rock-Beaverhead drainage.

Man reversed that situation this century by altering habitats, overharvesting, and introducing competing non-native salmonids, such as brook, rainbow, and brown trout. Currently, Montana's Arctic grayling stronghold consists of populations in about two dozen lakes. The only self-sustaining, river-dwelling population lives in the upper Big Hole River and lower parts of its tributaries; it is genetically and behaviorally distinct from its lake-dwelling cousins. Plans are afoot, however, to expand the state's river-dwelling grayling, using broodstock from the Big Hole River.

"We want to have five riverine populations by the year 2020," says Chris Hunter, fisheries special projects bureau chief for Montana Fish, Wildlife & Parks (FWP). Last year, FWP fisheries workers planted about 30,000 grayling in the upper Ruby River and plan to do the same this year. "Hopefully, we'll do the same in the Sun River this year, too," he says.

Another stocking effort may take place in Cherry Creek, a tributary of the Madison River. "We are currently looking at getting rid of the creek's non-natives and reintroducing westslope cutthroat trout and grayling," says Hunter.

If all these current efforts are successful—Big Hole, Ruby, Sun, and Cherry—FWP's Fisheries Division still has to come up with a fifth stream for reintroduction by 2001 in order to meet the 2020 goal. "To demonstrate we are making progress by 2020," Hunter explains, "we need to monitor them over several years."

The upper Big Hole River in the summer is low, warm, and "deoxygenated," Barndt says. The reverse is true in the canal. In the summer, the water is high and full of oxygen, then low in the winter. "When water in the canal is low, the temperature is low also, but the oxygen is not too low. At low temperatures, grayling can withstand pretty low dissolved oxygen levels."

"From October to May," adds MSU's Kaya, "they are really living in what amounts to a series of small ponds."

Grayling got into the canal from Pishkun Reservoir. The reservoir was stocked at least seven times from 1937 through 1943. It's not known how long it took the species to become self-sustaining in the canal, but in 1971 an FWP fisheries biologist reported grayling there.

Even though the canal's grayling have water and oxygen at the right time of year, they must still avoid competition and predators, mainly from rainbow trout and northern pike. Historically, Arctic grayling in Montana only had to live with 10 other fish species, including two salmonids—westslope cutthroat and mountain whitefish. The introduction of rainbow, brook, and brown trout brought in competition grayling had not evolved with.

Rainbows compete with grayling for spawning areas and food. In the upper Big Hole River, grayling are hanging on in part because they have little competition. In the canal, salmonid competition is also scant because of the absence of the right gravel for rainbows to build spawning nests, or redds. "Grayling have the least stringent

spawning requirements of the salmonids," Barndt says. "They don't build redds. They broadcast spawn."

Northern pike, as the grayling's main predator in the canal, would appear to have an ideal banquet in the winter when all fish are confined to small pools. But northerns don't spend the winter in constricted pools with grayling. In two falls and three springs of netting the canal, Barndt found only eight adult rainbows and eight adult northern pike. He did, however, capture more than 100 juvenile northern pike. The few adults indicate those juveniles don't overwinter. "Northern pike get flushed out of the system," Kaya says. "If that were not the case, I think this small grayling population would have a hard time surviving."

For anglers who would like to catch a grayling, nearby Tunnel Lake provides a good fishery. FWP fishing regulations forbid keeping any grayling caught in the canal, though the daily and possession limit of rainbow trout is five. For northern pike the daily and possession limit is 10.

Barndt studied the canal's grayling to see if the population is self-sustaining and how it survives, yet his findings could have larger implications. "The fact that they are found in such tough conditions," says Jim Magee, FWP's grayling biologist, "may make us think twice about how tough a species they are. They may survive in those really marginal areas we had ignored earlier."

Last year Magee took a look at the feasibility of the Sun River to hold grayling and helped stock the fish in the Ruby. It was also a good year for grayling in the Big Hole River. "We had our best population since 1983," he says. Last year's count was 96 grayling per mile (fish 1 year old and older). Back in 1983, the population was 111 per mile in the Big Hole. The low point came in 1989 at 22 fish per mile.

The key in the last three years has been plenty of water and little competition from brook trout in the Big Hole, Magee says. "Brook trout and grayling are using different micro-habitats."

That fits in nicely with some of Barndt's findings: Grayling do best in streams with low densities of competing fish and low gradient, or slope. Is that a recipe for another canal? "If you could find another one with sufficient winter habitat," Barndt says, "and cool enough temperatures in late summer, I'd say go for it."

Readers Respond

Opportunities for Disabled Hunters Appreciated

After scraping the moss and mildew from my word processor I wish to express my feeling on your article, "Meeting the Challenge" (November/December 1997).

While I am not a paraplegic yet, after my accident in 1984, having my whole left side racked-up, the permit given to hunt from a vehicle did extend my ability to hunt [in Montana] until my move to Washington.

Making it possible for the disabled to continue and enjoy hunting extends the value of life that non-disabled enjoy. I wish to thank those who assist as well as FWP for the extension of this tradition. If I return to Montana and hunt, it just may be in a wheelchair!—*Garry L. Preston, Shelton, Washington*

I enjoyed reading "Meeting the Challenge" by Alan Charles in the November/December issue. When I retired from FWP, the department was just starting a program for hunters with disabilities. The department has come a long way with this program.

I continue to enjoy *Montana Outdoors*. Keep up the good work.—*Leonard Christensen, retired game warden, Kalispell*

Photo Issue Stellar

Congratulations on yet another stellar photo issue (January/February). The photography is magnificent, the layout imaginative, and the text colorful and thought-provoking.

The interweaving of the title with the buck's antlers on the cover is a subtle but clever touch worthy of recognition. Keep up the good work!—*Bob Jones, Missoula*

Landmark Solution

I have a possible solution for the Marine sergeant major who wrote to make you aware of his difficulty in locating Montana landmarks pictured in *Montana Outdoors*. I had the same problem until I acquired a copy of the *Montana Atlas and Gazetteer* published by DeLorme Mapping, P.O. Box 298, Freeport, ME 04032. Problem solved!

By the way, *MO* is a great publication. I really enjoyed "The Dairy Queen Bear" (March/April issue).—*T.O. Dissinger, Centre Hall, Pennsylvania*

Bon Appetit!

I have recently discovered a cookbook you put out called *Savoring the Wild*, and was wondering if you had any current editions for sale. Hungrily awaiting your reply.—*Kevin Hennessy, Chesapeake, Ohio*

First published by Montana Fish, Wildlife & Parks in 1974, Savoring the Wild *was out of print for many years. Fortunately for hungry hunters and anglers like yourself, Falcon Press revised and reprinted it a few years back. It is available for $8.95 plus $3.00 shipping and handling from Falcon Press, P.O. Box 1718, Helena, MT 59624 (1-800-582-2665).—Editor*

MONTANA OUTDOORS MARKET

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Call of the Wild

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Logo Details

Chipmunk Chic

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Contributors

Lorentz

"Eastern Montana's Makoshika State Park," says **Chris Lorentz**, "offers a landscape of unique geology and exceptional beauty." Located just outside of Glendive, this badlands site also has a fascinating history—70 million years ago it was a humid jungle populated by dinosaurs, crocodiles, and tropical plants—just the opposite of the arid climate of today. In his article, "Landscape of Change" (p. 2), Lorentz describes the park's geology, dinosaur discoveries, wildlife, and recreational attractions. A Parks Division employee assigned to FWP's Miles City region, Lorentz is manager of Makoshika.

The 150-mile-long Rocky Mountain Front offers sanctuary for all of Montana's big game animals, plus a rich tapestry of small mammals, birds, reptiles, and amphibians. Throw in spectacular scenery, dinosaur history, and rare plants, and you have the makings of a fantastic wildlife viewing tour. In her article beginning on page 8, **Deborah Richie** describes the East Front's natural attractions in detail, concentrating on four wildlife management areas, a Nature Conservancy preserve, a ranch owned by the Boone and Crockett Club, a dinosaur dig, and a pristine lake in the Lewis and Clark National Forest. Owner of Deborah Richie Communications in Missoula, Richie is a wildlife interpretive specialist who writes often for *Montana Outdoors*.

Is it possible to live in Montana and not grow up fishing with family and

Hagengruber family

friends? Unfortunately, the answer is yes, says **Dave Hagengruber**, and that's why FWP has instituted something called "Family Fishing Adventures" (p. 15). This program, designed to eliminate barriers that keep new anglers from getting out on the water, has several components: a fishing club for youngsters, a tackle loaner program, fishing ponds in towns and cities, a school program called "Hooked on Fishing, Not on Drugs," fishing clinics for kids, and a free fishing day for parents. Hagengruber is FWP's angler education specialist in Helena. To learn more about Family Fishing Adventures and how you can become involved, call him at 406-444-9736.

Knight

There are more than three dozen "Rock Creeks" in Montana, but only one with a national reputation as a blue-ribbon trout stream and conservation battleground. When flyfishermen talk about Rock Creek, they mean the one that originates high in the Anaconda-Pintler Mountains and winds its way to the Clark Fork River near Missoula. Made famous by anglers like Joe Brooks and Dan Bailey in the 1950s and 1960s and saved from extensive logging and development through the vigilance of hunters, anglers, and conservation organizations, Rock Creek is a case study in trout stream preservation. In recent years, says **Ellen Knight**, conservation easements negotiated by the Rock Creek Trust, its partners, and area landowners have protected more than 4,600 acres in the Rock Creek drainage. For a glimpse into Rock Creek's colorful history and a summary of present-day conservation strategies, turn to her article beginning on page 19. Knight is director of the Missoula-based Rock Creek Trust, a nonprofit organization dedicated to protecting conservation values in the Rock Creek drainage.

MO thanks the following artists, photographers, and organizations for their contributions to this issue: **Steven Akre**, Ulm; **Denver Bryan** and **Bob Harmon/Museum of the Rockies**, Bozeman; **Malinda Crawford** and **Michael Javorka**, Kalispell; **Gene Fischer**, **Libby Gurnett**, **John Lambing**, and the **Montana Historical Society**, Helena; **Chuck Haney**, Whitefish; **Larry Javorsky** and **Rebecca Javorsky**, Hamilton; **Donald M. Jones**, Troy; **Gary Leppart** and **Glenn West**, Billings; **Jim Mepham**, Choteau; **Bethany Milan**, Creston; **Neal & Mary Jane Mishler**, **Richard Mousel**, **Alan G. Nelson**, and **Rodney Schlecht**, Great Falls; **John G. Obrey, Jr.**, Salt Lake City, UT; **Lance Olsen**, Glendive; **Rock Creek Trust/Michael Gallacher**, Missoula; **Cynthia Spence**, Aurora, CO; and **Al Troth**, Dillon. Thanks also to the following employees who work for the department: **Bruce Auchly**, Great Falls; **Dave Hagengruber**, Helena; **Jerry Walker**, Bozeman; and **Ron Wiley**, Glendive.

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